

1 **CLAIMS**

2 What is claimed is:

1 1. A method for using a computer system to transform information, comprising:
2 creating a target document in a desired output format for a desired output device;
3 creating page elements in the target document that correspond to page elements from
4 a source document;
5 extracting information from the page elements from the source document and
6 populating the target's page elements with the extracted information;
7 transforming the page elements in the target document based on a transformation
8 table with formatting appropriate to the desired output format and desired output device.

1 2. The method of claim 1, further comprising:
2 saving a document.

1 3. The method of claim 2, wherein saving the document also saves document
2 formatting to a collection of associated documents.

1 4. The method of claim 1, further comprising:
2 saving a composite document including a formatting document, page elements, and
3 information.

1 5. The method of claim 1, further comprising:
2 converting a composite document including a formatting document, page elements,
3 and information into another document format.

1 6. A system for using a computer system to transform information, comprising:

2 means to create a target document in a desired output format for a desired output

3 device;

4 means to create page elements in the target document that correspond to page

5 elements from a source document;

6 means to extract information from the page elements from the source document and

7 populating the target's page elements with the extracted information;

8 means to transform the page elements in the target document based on a

9 transformation table with formatting appropriate to the desired output format and desired

10 output device.

1 7. The system of claim 6, further comprising:

2 means to save a document.

1 8. The system of claim 7, wherein saving the document also saves document

2 formatting to a collection of associated documents.

1 9. The system of claim 6, further comprising:

2 means to save a composite document including a formatting document, page

3 elements, and information.

1 10. The system of claim 6, further comprising:

2 means to convert a composite document including a formatting document, page

3 elements, and information into another document format.

1 11. A computer program stored on a computer readable medium, the program,
2 comprising:
3 a module to create a target document in a desired output format for a desired output
4 device;
5 a module to create page elements in the target document that correspond to page
6 elements from a source document;
7 a module to extract information from the page elements from the source document
8 and populating the target's page elements with the extracted information;
9 a module to transform the page elements in the target document based on a
10 transformation table with formatting appropriate to the desired output format and desired
11 output device.

1 12. The medium of claim 11, further comprising:

2 a module to save a document.

1 13. The medium of claim 12, wherein saving the document also saves document
2 formatting to a collection of associated documents.

1 14. The medium of claim 11, further comprising:

2 a module to save a composite document including a formatting document, page
3 elements, and information.

1 15. The medium of claim 11, further comprising:

2 a module to convert a composite document including a formatting document, page
3 elements, and information into another document format.

1 16. A information transformation apparatus, comprising:
2 a processor;
3 a memory, communicatively connected to the processor;
4 a program, stored in the memory, including,
5 a module to create a target document in a desired output format for a desired
6 output device;
7 a module to create page elements in the target document that correspond to
8 page elements from a source document;
9 a module to extract information from the page elements from the source
10 document and populating the target's page elements with the extracted information;
11 a module to transform the page elements in the target document based on a
12 transformation table with formatting appropriate to the desired output format and desired
13 output device.

1 17. The apparatus of claim 16, further comprising:
2 a module to save a document.

1 18. The apparatus of claim 17, wherein saving the document also saves document
2 formatting to a collection of associated documents.

1 19. The apparatus of claim 16, further comprising:
2 a module to save a composite document including a formatting document, page
3 elements, and information.

1 20. The apparatus of claim 16, further comprising:
2 a module to convert a composite document including a formatting document, page
3 elements, and information into another document format.

1 21. A method for using a computer to transform information, comprising:
2 identifying a source of data;
3 identifying a source device format type from the source data, if possible;
4 identifying the source device format type, if not already identified;
5 identifying a target device format type;
6 instantiating a source device format document based on the source device format
7 type, if not already instantiated;
8 instantiating a target device format document based on the target device format type,
9 if not already instantiated;
10 converting the source data for use in the source device format document, if necessary;
11 identifying potential page elements from the source data;
12 generating source page elements with identifying source tags within the source device
13 format document, if source data is un-referenced by source page elements;
14 populating source page elements with associated source data;
15 applying attributes associated with the source page elements to the populated source
16 data;
17 identifying page elements in the target device format type;
18 generating target page elements with identifying target tags corresponding to source

19 page elements, if the source page elements have no corresponding target page elements;
20 transforming attributes associated with the generated target page elements according
21 to attributes associated with the target device format document, if available, otherwise,
22 identifying transformation parameters for transforming target page elements
23 based on the differences between the source device format type and target device format
24 type, and
25 transforming attributes associated with the generated target page elements
26 according to a the transformation parameters;
27 populating target page elements corresponding to source page elements with source
28 data; and
29 applying attributes associated with the target page elements to the populated source
30 data.

1 22. The method of claim 21, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 23. The method of claim 21, wherein applied attributes include formatting
2 information.

1 24. The method of claim 21, further comprising:
2 saving a device format document.

1 25. The method of claim 24, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 26. The method of claim 21, further comprising:
2 saving a composite document including a device format document, page elements,
3 and source data.

1 27. The method of claim 21, further comprising:
2 converting a composite document including a device format document, page
3 elements, and source data into another document format.

1 28. A method for using a computer to transform information, comprising:
2 selecting a source of data;
3 identifying a source device format type from the source data, if possible;
4 identifying the source device format type, if not already identified;
5 instantiating a source device format document based on the source device format
6 type, if not already instantiated;
7 converting the source data for use in the source device format document, if necessary;
8 identifying potential page elements from the source data;
9 generating source page elements with identifying source tags within the source device
10 format document, if source data is un-referenced by source page elements;
11 populating source page elements with associated source data;
12 applying attributes associated with the source page elements to the populated source
13 data.

1 29. The method of claim 28, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 30. The method of claim 28, wherein applied attributes include formatting
2 information.

1 31. The method of claim 28, further comprising:
2 saving a device format document.

1 32. The method of claim 31, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 33. The method of claim 28, further comprising:
2 saving a composite document including a device format document, page elements,
3 and source data.

1 34. The method of claim 28, further comprising:
2 converting a composite document including a device format document, page
3 elements, and source data into another document format.

1 35. A method for using a computer to transform information, comprising:
2 identifying source page elements in a source device format document;
3 identifying a source device format type, if not already identified;
4 identifying a target device format type;
5 instantiating a target device format document based on the target device format type,
6 if not already instantiated;
7 identifying page elements in the target device format type;
8 generating target page elements with identifying target tags corresponding to source
9 page elements, if the source page elements have no corresponding target page elements;
10 transforming attributes associated with the generated target page elements according
11 to attributes associated with the target device format document, if available, otherwise,
12 identifying transformation parameters for transforming target page elements
13 based on the differences between the source device format type and target device format
14 type, and
15 transforming attributes associated with the generated target page elements
16 according to a the transformation parameters;
17 populating target page elements corresponding to source page elements with data
18 from the source page elements; and
19 applying attributes associated with the target page elements to the data in the
20 populated target page elements.

1 36. The method of claim 35, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 37. The method of claim 35, wherein applied attributes include formatting
2 information.

1 38. The method of claim 35, further comprising:
2 saving a device format document.

1 39. The method of claim 38, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 40. The method of claim 35, further comprising:
2 saving a composite document including a device format document, page elements,
3 and source data.

1 41. The method of claim 35, further comprising:
2 converting a composite document including a device format document, page
3 elements, and source data into another document format.

1 42. A system for using a computer to transform information, comprising:
2 means to identify a source of data;
3 means to identify a source device format type from the source data, if possible;
4 means to identify the source device format type, if not already identified;
5 means to identify a target device format type;
6 means to instantiate a source device format document based on the source device

7 format type, if not already instantiated;

8 means to instantiate a target device format document based on the target device

9 format type, if not already instantiated;

10 means to convert the source data for use in the source device format document, if

11 necessary;

12 means to identify potential page elements from the source data;

13 means to generate source page elements with identifying source tags within the

14 source device format document, if source data is un-referenced by source page elements;

15 means to populate source page elements with associated source data;

16 means to apply attributes associated with the source page elements to the populated

17 source data;

18 means to identify page elements in the target device format type;

19 means to generate target page elements with identifying target tags corresponding to

20 source page elements, if the source page elements have no corresponding target page

21 elements;

22 means to transform attributes associated with the generated target page elements

23 according to attributes associated with the target device format document, if available,

24 otherwise using,

25 means to identify transformation parameters for transforming target page

26 elements based on the differences between the source device format type and target device

27 format type, and

28 means to transform attributes associated with the generated target page
29 elements according to a the transformation parameters;
30 means to populate target page elements corresponding to source page elements with
31 source data; and
32 means to apply attributes associated with the target page elements to the populated
33 source data.

1 43. The system of claim 42, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 44. The system of claim 42, wherein applied attributes include formatting
2 information.

1 45. The system of claim 42, further comprising:
2 means to save a device format document.

1 46. The system of claim 45, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 47. The system of claim 42, further comprising:
2 means to save a composite document including a device format document, page
3 elements, and source data.

1 48. The system of claim 42, further comprising:
2 means to convert a composite document including a device format document, page
3 elements, and source data into another document format.

- 1 49. A system for using a computer to transform information, comprising:
2 means to select a source of data;
3 means to identify a source device format type from the source data, if possible;
4 means to identify the source device format type, if not already identified;
5 means to instantiate a source device format document based on the source device
6 format type, if not already instantiated;
7 means to convert the source data for use in the source device format document, if
8 necessary;
9 means to identify potential page elements from the source data;
10 means to generate source page elements with identifying source tags within the
11 source device format document, if source data is un-referenced by source page elements;
12 means to populate source page elements with associated source data;
13 means to apply attributes associated with the source page elements to the populated
14 source data.
- 1 50. The system of claim 49, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.
- 1 51. The system of claim 49, wherein applied attributes include formatting
2 information.
- 1 52. The system of claim 49, further comprising:
2 means to save a device format document.

1 54. The system of claim 49, further comprising:

1 55. The system of claim 49, further comprising:

2 means to convert a composite document including a device format document, page
3 elements, and source data into another document format.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	

1 56. A system for using a computer to transform information, comprising:
2 means to identify source page elements in a source device format document;
3 means to identify a source device format type, if not already identified;
4 means to identify a target device format type;
5 means to instantiate a target device format document based on the target device
6 format type, if not already instantiated;
7 means to identify page elements in the target device format type;
8 means to generate target page elements with identifying target tags corresponding to
9 source page elements, if the source page elements have no corresponding target page
10 elements;
11 means to transform attributes associated with the generated target page elements
12 according to attributes associated with the target device format document, if available,
13 otherwise using,
14 means to identify transformation parameters for transforming target page
15 elements based on the differences between the source device format type and target device
16 format type, and
17 means to transform attributes associated with the generated target page
18 elements according to a the transformation parameters;
19 means to populate target page elements corresponding to source page elements with
20 data from the source page elements; and
21 means to apply attributes associated with the target page elements to the data in the

22 populated target page elements.

1 57. The system of claim 56, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 58. The system of claim 56, wherein applied attributes include formatting
2 information.

1 59. The system of claim 56, further comprising:
2 means to save a device format document.

1 60. The system of claim 59, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 61. The system of claim 56, further comprising:
2 means to save a composite document including a device format document, page
3 elements, and source data.

1 62. The system of claim 56, further comprising:
2 means to convert a composite document including a device format document, page
3 elements, and source data into another document format.

1 63. A computer program stored on a computer readable medium, the program,
2 comprising:
3 a module to identify a source of data;
4 a module to identify a source device format type from the source data, if possible;
5 a module to identify the source device format type, if not already identified;

6 a module to identify a target device format type;

7 a module to instantiate a source device format document based on the source device

8 format type, if not already instantiated;

9 a module to instantiate a target device format document based on the target device

10 format type, if not already instantiated;

11 a module to convert the source data for use in the source device format document, if

12 necessary;

13 a module to identify potential page elements from the source data;

14 a module to generate source page elements with identifying source tags within the

15 source device format document, if source data is un-referenced by source page elements;

16 a module to populate source page elements with associated source data;

17 a module to apply attributes associated with the source page elements to the

18 populated source data;

19 a module to identify page elements in the target device format type;

20 a module to generate target page elements with identifying target tags corresponding

21 to source page elements, if the source page elements have no corresponding target page

22 elements;

23 a module to transform attributes associated with the generated target page elements

24 according to attributes associated with the target device format document, if available,

25 otherwise using,

26 a module to identify transformation parameters for transforming target page

elements based on the differences between the source device format type and target device format type, and

a module to transform attributes associated with the generated target page elements according to a the transformation parameters;

a module to populate target page elements corresponding to source page elements with source data; and

a module to apply attributes associated with the target page elements to the populated source data.

64. The medium of claim 63, wherein the generated source page elements with identifying source tags within the source device format document are based on the identified potential page elements.

65. The medium of claim 63, wherein applied attributes include formatting information.

66. The medium of claim 63, further comprising:
a module to save a device format document.

67. The medium of claim 66, wherein saving a device format document also saves document formatting to a collection of associated device format documents.

68. The medium of claim 63, further comprising:
a module to save a composite document including a device format document, page elements, and source data.

1 69. The medium of claim 63, further comprising:

2 a module to convert a composite document including a device format document, page
3 elements, and source data into another document format.

1 70. A computer program stored on a computer readable medium, the program,
2 comprising:

3 a module to select a source of data;

4 a module to identify a source device format type from the source data, if possible;

5 a module to identify the source device format type, if not already identified;

6 a module to instantiate a source device format document based on the source device
7 format type, if not already instantiated;

8 a module to convert the source data for use in the source device format document, if
9 necessary;

10 a module to identify potential page elements from the source data;

11 a module to generate source page elements with identifying source tags within the
12 source device format document, if source data is un-referenced by source page elements;

13 a module to populate source page elements with associated source data;

14 a module to apply attributes associated with the source page elements to the
15 populated source data.

1 71. The medium of claim 70, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 72. The medium of claim 70, wherein applied attributes include formatting
2 information.

1 73. The medium of claim 70, further comprising:
2 a module to save a device format document.

1 74. The medium of claim 73, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 75. The medium of claim 70, further comprising:
2 a module to save a composite document including a device format document, page
3 elements, and source data.

1 76. The medium of claim 70, further comprising:
2 a module to convert a composite document including a device format document, page
3 elements, and source data into another document format.

1 77. A computer program stored on a computer readable medium, the program,
2 comprising:
3 a module to identify source page elements in a source device format document;
4 a module to identify a source device format type, if not already identified;
5 a module to identify a target device format type;
6 a module to instantiate a target device format document based on the target device
7 format type, if not already instantiated;
8 a module to identify page elements in the target device format type;
9 a module to generate target page elements with identifying target tags corresponding
10 to source page elements, if the source page elements have no corresponding target page
11 elements;
12 a module to transform attributes associated with the generated target page elements
13 according to attributes associated with the target device format document, if available,
14 otherwise using,
15 a module to identify transformation parameters for transforming target page
16 elements based on the differences between the source device format type and target device
17 format type, and
18 a module to transform attributes associated with the generated target page
19 elements according to a the transformation parameters;
20 a module to populate target page elements corresponding to source page elements
21 with data from the source page elements; and

22 a module to apply attributes associated with the target page elements to the data in the
23 populated target page elements.

1 78. The medium of claim 77, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 79. The medium of claim 77, wherein applied attributes include formatting
2 information.

1 80. The medium of claim 77, further comprising:
2 a module to save a device format document.

1 81. The method of claim 80, wherein saving a device format document also saves
2 document formatting to a collection of associated device format documents.

1 82. The medium of claim 77, further comprising:
2 a module to save a composite document including a device format document, page
3 elements, and source data.

1 83. The medium of claim 77, further comprising:
2 a module to convert a composite document including a device format document, page
3 elements, and source data into another document format.

1 84. An information transformation apparatus, comprising:
2 a processor;
3 a memory, communicatively connected to the processor;
4 a program, stored in the memory, including,

5 a module to identify a source of data;

6 a module to identify a source device format type from the source data, if

7 possible;

8 a module to identify the source device format type, if not already identified;

9 a module to identify a target device format type;

10 a module to instantiate a source device format document based on the source

11 device format type, if not already instantiated;

12 a module to instantiate a target device format document based on the target

13 device format type, if not already instantiated;

14 a module to convert the source data for use in the source device format

15 document, if necessary;

16 a module to identify potential page elements from the source data;

17 a module to generate source page elements with identifying source tags within

18 the source device format document, if source data is un-referenced by source page elements;

19 a module to populate source page elements with associated source data;

20 a module to apply attributes associated with the source page elements to the

21 populated source data;

22 a module to identify page elements in the target device format type;

23 a module to generate target page elements with identifying target tags

24 corresponding to source page elements, if the source page elements have no corresponding

25 target page elements;

26 a module to transform attributes associated with the generated target page
27 elements according to attributes associated with the target device format document, if
28 available, otherwise using,
29 a module to identify transformation parameters for transforming target
30 page elements based on the differences between the source device format type and target
31 device format type, and
32 a module to transform attributes associated with the generated target
33 page elements according to a the transformation parameters;
34 a module to populate target page elements corresponding to source page
35 elements with source data; and
36 a module to apply attributes associated with the target page elements to the
37 populated source data.

1 85. The apparatus of claim 84, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 86. The apparatus of claim 84, wherein applied attributes include formatting
2 information.

1 87. The apparatus of claim 84, further comprising:
2 a module to save a device format document.

1 88. The apparatus of claim 87, wherein saving a device format document also
2 saves document formatting to a collection of associated device format documents.

1 90. The apparatus of claim 84, further comprising:
2 a module to convert a composite document including a device format document, page
3 elements, and source data into another document format.

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1 91. An information transformation apparatus, comprising:
2 a processor;
3 a memory, communicatively connected to the processor;
4 a program, stored in the memory, including,
5 a module to select a source of data;
6 a module to identify a source device format type from the source data, if
7 possible;
8 a module to identify the source device format type, if not already identified;
9 a module to instantiate a source device format document based on the source
10 device format type, if not already instantiated;
11 a module to convert the source data for use in the source device format
12 document, if necessary;
13 a module to identify potential page elements from the source data;
14 a module to generate source page elements with identifying source tags within
15 the source device format document, if source data is un-referenced by source page elements;
16 a module to populate source page elements with associated source data;
17 a module to apply attributes associated with the source page elements to the
18 populated source data.

1 92. The apparatus of claim 91, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 93. The apparatus of claim 91, wherein applied attributes include formatting
2 information.

1 94. The apparatus of claim 91, further comprising:
2 a module to save a device format document.

1 95. The apparatus of claim 94, wherein saving a device format document also
2 saves document formatting to a collection of associated device format documents.

1 96. The apparatus of claim 91, further comprising:
2 a module to save a composite document including a device format document, page
3 elements, and source data.

1 97. The apparatus of claim 91, further comprising:
2 a module to convert a composite document including a device format document, page
3 elements, and source data into another document format.

1 98. An information transformation apparatus, comprising:
2 a processor;
3 a memory, communicatively connected to the processor;
4 a program, stored in the memory, including,
5 a module to identify source page elements in a source device format
6 document;
7 a module to identify a source device format type, if not already identified;
8 a module to identify a target device format type;
9 a module to instantiate a target device format document based on the target
10 device format type, if not already instantiated;
11 a module to identify page elements in the target device format type;
12 a module to generate target page elements with identifying target tags
13 corresponding to source page elements, if the source page elements have no corresponding
14 target page elements;
15 a module to transform attributes associated with the generated target page
16 elements according to attributes associated with the target device format document, if
17 available, otherwise using,
18 a module to identify transformation parameters for transforming target
19 page elements based on the differences between the source device format type and target
20 device format type, and
21 a module to transform attributes associated with the generated target

22 page elements according to a the transformation parameters;
23 a module to populate target page elements corresponding to source page
24 elements with data from the source page elements; and
25 a module to apply attributes associated with the target page elements to the
26 data in the populated target page elements.

1 99. The apparatus of claim 98, wherein the generated source page elements with
2 identifying source tags within the source device format document are based on the identified
3 potential page elements.

1 100. The apparatus of claim 98, wherein applied attributes include formatting
2 information.

1 101. The apparatus of claim 98, further comprising:
2 a module to save a device format document.

1 102. The apparatus of claim 101, wherein saving a device format document also
2 saves document formatting to a collection of associated device format documents.

1 103. The apparatus of claim 98, further comprising:
2 a module to save a composite document including a device format document, page
3 elements, and source data.

1 104. The apparatus of claim 98, further comprising:
2 a module to convert a composite document including a device format document, page
3 elements, and source data into another document format.